CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. A package divert mechanism, comprising:

a frame member adapted for use with an existing conveyor system for transporting an item in an original direction; and

a moveable diverting mechanism extending from the frame member, the moveable diverting mechanism being movable in at least one direction substantially perpendicular to the original direction of travel of the item being transported on the existing conveyor system.

2. The package divert mechanism of claim 1, wherein:

the moveable diverting mechanism is a bi-directional moveable diverting mechanism;

the at least one direction is a first direction and a second opposing direction, both substantially perpendicular to the original direction of travel of the item; and

the moveable bi-directoinal diverting mechanism is capable of diverting the item to either the first direction or the second opposing direction.

3. The package divert mechanism of claim 1, wherein the moveable diverting mechanism remains stationary so that a item can pass therethrough.

4. The package divert mechanism of claim 1, wherein the moveable diverting mechanism includes a downward extending blade having a first surface and a second surface and a longitudinal axis, the first and second surface facing opposing directions substantially perpendicular to the original direction of travel of the item and the longitudinal axis is substantially parallel to the original direction of travel of the item.

5. The package divert mechanism of claim 1, wherein the moveable diverting mechanism further includes a moving mechanism for moving the moveable diverting mechanism.

6. The package divert mechanism of claim 5, wherein the moving mechanism includes an actuator and a gliding mechanism.

7. The package divert mechanism of claim 6, further comprising a frame member of the frame and a mounting mechanism of the moveable diverting mechanism, the gliding mechanism extending from the frame member and connected to the mount of the moveable diverting mechanism.

8. The package divert mechanism of claim 5, further comprising an over current sensor for determining whether a current associated with the actuator exceeds a threshold limit.

9. The package divert mechanism of claim 1, further comprising a plurality of sensors associated with the moveable diverting mechanism.

10. The package divert mechanism of claim 9, wherein the plurality of sensors include:

at least one home sensor for detecting a home position of the moveable diverting mechanism;

at least one over travel sensor for detecting an over travel position of the moveable diverting mechanism; and

at least one photosensor for detecting a flow of the items.

11. The package divert mechanism of claim 1, further comprising momentary contacts which provide an input signal to control the movement of the moveable diverting mechanism.

12. The package divert mechanism of claim 1, further comprising hoods having openings, the hoods being positioned at an entrance and each exit of the frame.

13. The package divert mechanism of claim 12, further comprising at least one interlock switch for detecting a position of the hoods and providing a signal to a controller for shutting down movement of the moveable diverting mechanism when any of the hoods are in an upright position.

14. A bi-directional divert mechanism, comprising:

a frame having an entrance and a plurality of exits:

a gliding mechanism extending across a frame member of the frame and adapted to move between opposing exits of the plurality of exits;

a downward extending moveable blade member coupled to the gliding mechanism, the downward extending blade member having opposing blade surfaces and a longitudinal axis, the opposing blade

surfaces facing opposing exits and the longitudinal axis extending in a direction between the entrance and another of the exits.

15. The bi-directional divert mechanism of claim 14, further comprising a series of sensors for monitoring or controlling actions of the downward extending moveable blade member.

16. The bi-directional divert mechanism of claim 15, wherein the series of sensors includes at least one of:

at least one home sensor for detecting a home position of the downward extending moveable blade member;

at least one over travel sensor for detecting an over travel position of the downward extending moveable blade member;

at least one photosensor for detecting a flow of items;

an over current sensor for determining whether a current associated with an actuator of the downward extending moveable blade member exceeds a threshold limit; and

momentary contacts which provide an input signal to control the movement of the downward extending moveable blade member.

17. The bi-directional divert mechanism of claim 14, further comprising a safety hood positioned at least at one of the entrance and exits of the frame.

18. A method of diverting an item, comprising the steps of:

locating a first home position and a second home position of a diverting mechanism;

positioning the diverting mechanism at one of the first home position and the second home position;

determining a diverting direction of the item based on classification information associated with the item; and

controlling the diverting mechanism in accordance with the diverting direction.

19. The method of claim 18, wherein the controlling step includes:

moving the diverting mechanism in a first direction in order to divert the item in the first direction which is substantially perpendicular to an original direction of travel of the item;

moving the diverting mechanism in a second direction opposite the first direction;

allowing the diverting mechanism to remain stationary in order to allow the item to pass through unimpeded.

20. The method of claim 19, further comprising the step of determining and allocating a new home position of the diverting mechanism after the controlling step.

21. The method of claim 18, further comprising the step of suspending movement of the diverting mechanism based on at least one of:

a detection of an item being jammed;

a detection of an item exceeding a threshold physical characteristic limit;

a detection that the diverting mechanism exceeds a travel limit; and

a detection that an operator has open access to the diverting mechanism.

22. The method of claim 21, wherein the step of the detection of the jammed item and the detection of the item exceeding a threshold physical characteristic limit is based on a detection of an over current of an actuator which moves the diverting mechanism.